

Potential Neuropoison Could Be in Our Food



Long after a potentially neurotoxic flame retardant is off the market, it could linger in our food chain.

One of the most comprehensive analyses yet of human exposure to PBDEs, or polybrominated diphenyl ethers, shows that the chemical — long used in everything from computers to sleeping bags — enters humans through their diets, not just their household.

“The more meat you eat, the more PBDEs you have in your serum,” said Alicia Fraser, an environmental health researcher at Boston University’s School of Public Health who headed [the new study](#), published this month in *Environmental Health Perspectives*.

PBDEs are chemical cousins of [polychlorinated biphenyls](#), or PCBs, which are known to cause birth defects and neurological impairments. PCBs were banned throughout the world by the mid-1970s, when PBDEs were gaining popularity as flame retardants. PBDEs were soon found in most plastic-containing household products.

By the late 1990s, trace amounts of PBDEs had been found in people all over

the world, with the highest exposures measured in the United States. Researchers became nervous: Low doses caused neurological damage in laboratory animals, and the highest human PBDE levels were found in breast milk.

Whether PBDEs posed an immediate threat to humans was uncertain. Direct testing is unethical, and population-wide epidemiological studies are difficult to run. But there's enough reason for concern that the European Union banned two of the three most common PBDE formulations in 2004.

The Environmental Protection Agency, which in January admitted that it [lacked the ability](#) to establish basic standards of chemical safety, has not followed suit, but three states — California, Washington and Maine — have banned PBDEs since 2007. Many manufacturers have either stopped or plan on stopping their use.

“They are persistent in the environment. They don't get broken down. Therefore, it takes a really long time for the contamination to leave our environment and our bodies,” said Fraser. “Even though we don't know the health effects at this point, most people would want policies that would stop us from being exposed to them.”

But though well-advised, these bans won't eliminate the threat. Most PBDE exposure research has focused on how people can absorb it from dust and other indoor sources that would ostensibly be eliminated once PBDE-containing products were discarded. Much less attention has been paid to PBDEs in food.

Fraser's team analyzed biological samples from 2,000 people, provided by the U.S. Centers for Disease Control and Prevention. The same data was used in 2004 to establish [baseline estimates of PBDE exposure](#) in Americans, but that study didn't look for patterns in food consumption. Fraser's team found that PBDE levels were 25 percent higher in meat-eaters than vegetarians.

Though the channels of food contamination by PBDEs haven't been

conclusively established, it's possible that "the old products are being moved to landfills, and PBDEs could enter the environment that way," said Fraser. Earlier this year, the National Oceanic and Atmospheric Administration announced that PBDEs were [present in all U.S. coastal waters and the Great Lakes](#), with the highest levels found near urban and industrial areas.

That PBDEs would be highest in meat products makes sense, as the chemicals accumulate in fat, and it wouldn't be hard for PBDEs to enter their feed and water.

Fraser suggested that the United States adopt chemical regulations similar to those in the European Union, which in 2007 [mandated that chemicals be thoroughly tested](#) and proven safe before used. That's the opposite of the U.S. system, where chemicals are assumed to be safe until it's proved otherwise.

"The industry is finding new products to use as flame retardants, and we don't know the health and safety implications of those products either," said Fraser. "We need to test the health and safety implications of products before they go into use, not after."

See Also:

- [That \(Toxic\) New Car Smell](#)
- [California Takes on PC Waste](#)
- [Breast Cancer, Common Chemicals and Cause: Better Safe Than Sorry](#)
- [Scientists Stop EPA From Pushing Toxic Pesticide](#)

Citation: "Diet Contributes Significantly to the Body Burden of PBDEs in the General U.S. Population." By Alicia J. Fraser, Thomas F. Webster, Michael D. McClean. Environmental Health Perspectives, Vol. 117, No. 7. July, 2009.

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